

LIGHT TRAP SCREENING FOR COLLECTING SMALL SOFT-BODIED INSECTS¹

J. W. STEWART and THOMAS L. PAYNE²

Blacklight traps are valuable tools for use in insect survey and detection (Glick and Graham 1965, Hartsock et al. 1966, Hollingsworth et al. 1963). There are, however, difficulties which arise in their use, and light traps have been modified in various ways to overcome some of those difficulties. For example, Dickerson et al. (1970) modified a blacklight trap by adding a rainfree collecting container that separates desired Lepidoptera from smaller undesired insects.

In our application we found it impossible to identify small soft-bodied insects caught in the traps because they became mutilated by the movements of larger insects caught at the same time. Other workers have eliminated this problem by equipping light traps with closed holding chambers containing a killing substance (Rohwer and Rohwer 1964, Tomlinson, 1970). By killing all trapped insects small soft-bodied insects are no longer mutilated by insect movement. However, in our investigation it was important to obtain live catches of a small moth, the cottonwood twig borer, *Gypsonoma haimbachiana* (Kearfott) (Lepidoptera: Olethruetidae).

In early spring 1970 a blacklight trap conforming to ESA standards (Harding et al. 1966) was placed at the edge of a cottonwood plantation on the Texas A&M University Farm, Burleson County, Texas. Few insects were trapped at that time, however, as the season progressed many large insects (scarab beetles, ground beetles, and moths) and some smaller insects were caught in the trap. Once in the holding

¹Accepted for publication: July 2, 1971. Texas Agricultural Experiment Station paper number 9018; supported by McIntire-Stennis project 1525 [3.0124].

²Department of Entomology, Texas A&M University, College Station, Texas 77843.

chamber of the trap the smaller soft-bodied insects were destroyed by the continued crawling and flying of the larger insects.

LIGHT TRAP MODIFICATION

To prevent large insects from entering the trap a cylindrical 2-2 mesh wire screen, which fit snugly around the entrance to the holding chamber, was placed over the light source. This modification proved adequate in keeping most large insects out of the trap; however, the passage of large numbers of small staphylinid beetles was not impeded. As a result, the total catch of staphylinid beetles from any one night would completely cover the bottom of the holding chamber and the moths that were trapped were still mutilated beyond identification.

It was apparent that further modifications had to be made. The 2-2 mesh wire screen was replaced with 4-4 mesh wire screen and a

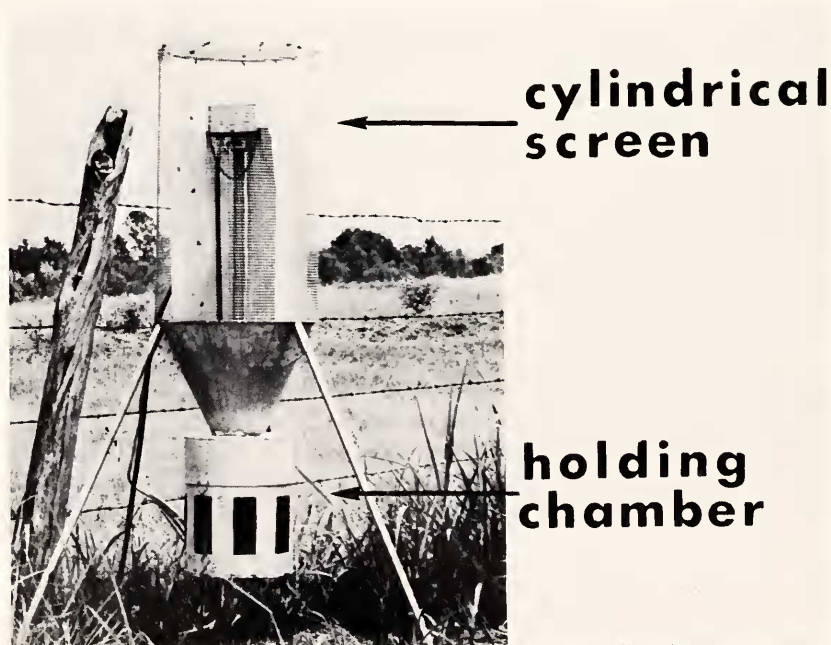


FIG. 1. Standard blacklight trap with a cylindrical 4-4 mesh wire screen top and modified holding chamber.

holding chamber of different design was constructed (Fig. 1). The chamber measured 34 cm height x 25 cm diameter and was constructed of 26 gauge galvanized metal. Five 76 x 101 mm windows were cut in the chamber equidistantly around the circumference and covered with 14-14 mesh copper screen. With these modifications, the holding chamber no longer allowed entry to any large insects. In addition, and of prime importance, the screened bottom enabled the small staphylinid beetles entering the chamber to pass through the bottom. Subsequently, the small soft-bodied insects caught in the trap were not damaged and could be collected in good condition.

Separation and elimination of undesirable insects by screening is in itself advantageous; however, another important aspect is the significant reduction in the amount of time required for handling and identifying trapped specimens.

LITERATURE CITED

- DICKERSON, WILLARD A., CECIL R. GENTRY, and WILLIAM G. MITCHELL. 1970. A rainfree collecting container that separates desired Lepidoptera from smaller undesired insects in light traps. *J. Econ. Ent.* 63:4:1371.
- GLICK, P. A. and H. M. GRAHAM. 1965. Seasonal light-trap collection of Lepidopterous cotton insects in south Texas. *J. Econ. Ent.* 58(5):880-82.
- HARDING, W. C., JR., J. G. HARTSOCK, and G. G. ROHWER. 1966. Blacklight trap standards for general insect surveys. *Bull. Ent. Soc. America* 12(1):31-32.
- HARTSOCK, J. G., H. D. DEAY, and J. R. BARRETT, JR. 1966. Practical application of insect attraction in the use of light traps. *Bull. Ent. Soc. America* 12(4):375-77.
- HOLLINGSWORTH, J. P., J. G. HARTSOCK, and J. M. STANLEY. 1963. *Electric insect traps for survey purposes*. United States Dept. Agr., ARS 42-3-1, 24 pp.
- ROHWER, G. G. and S. A. ROHWER II. 1964. Tests with trap design and killing agents in blacklight survey traps. *J. Econ. Ent.* 57(2):301-2.
- TOMLINSON, WILLIAM E., JR. 1970. Effect of blacklight trap height on catches of moths of three cranberry insects. *J. Econ. Ent.* 63(5):1678-1679.

2.0124 Light trap screening for collecting small soft-bodied insects.

ABSTRACT.—The use of 4-4 mesh wire screen and a holding chamber of 26 gauge galvanized metal with five windows covered with 14-14 mesh copper screen permits collecting undamaged small Lepidoptera and other small soft-bodied insects.—J. W. STEWART and THOMAS L. PAYNE, *Department of Entomology, Texas A&M University, College Station, TX 77843.*

Descriptors: blacklight traps; trap modification for small Lepidoptera; collecting, small, soft-bodied insects; technique.

(THE ENTOMOLOGIST'S LIBRARY, *continued from p. 308.*)

Munro, H. A. V. 1969. Manual of fumigation for insect control. 2nd ed. New York: UNIPUB. xii+381. Paper \$7.00.

16. Regional Lists

Jacot-Guillarmod, C. F. 1970. Catalogue of the Thysanoptera of the World, Part 1. Grahamstown, South Africa: Cape Provincial Museums at the Albany Museum. 216 p. Paper.

17. Identification Aids**Acarina:**

Krantz, G. W. 1970. A manual of acarology. Corvallis: Oregon State Univ. Book Stores. 335 p. Paper.

Tuttle, D. M. and E. W. Baker. 1971. Spider mites of southwestern United States and a revision of the family Tetranychidae. Tucson: University of Arizona Press. vii+141 p. Cloth \$7.50.

Coleoptera:

Johnson, C. D. 1970. Biosystematics of the Arizona, California, and Oregon species of the seed beetle genus *Acanthoscelides* Schilsky (Coleoptera: Bruchidae). Berkeley: University of California Press. 113 p. Paper \$5.50.

O'Brien, C. W. 1970. A taxonomic revision of the weevil genus *Dorytomus* in North America (Coleoptera: Curculionidae). Berkeley: University of California Press. 80 p. Paper \$3.00.

Ritcher, P. O. 1966. White grubs and their allies. Corvallis: Oregon State University Press. 219 p. Cloth \$10.00.

Diptera:

Huckett, H. C. 1971. The Anthomyiidae of California exclusive of the subfamily Scatophaginae (Diptera). Berkeley: Bull. California Ins. Surv. v. 12, 121 p. Paper \$5.00.

Hymenoptera:

Cole, A. C. 1968. *Pogonomyrmex* harvester ants. Knoxville: University of Tennessee Press. x+222 p. Cloth \$7.50.

Hurd, P. D., Jr. and E. G. Linsley. 1970. A classification of the squash and gourd bees *Peponapis* and *Xenoglossa* (Hymenoptera: Apoidea). Berkeley: University of California Press. 39 p. Paper \$1.50.